

Listing of Claims:

1. (Previously Presented) A transmission state indicating method for a predetermined transmission system, by SONET (Synchronous Optical Network)/SDH (Synchronous Digital Hierarchy), in which high capacity data is divided into a plurality of low capacity virtual containers and transmitted via a plurality of channels which configure a communication network by the SONET/SDH based on clocks at the respective channels, the method comprising:

assembling a plurality of frames back into a multiplexed frame, wherein the plurality of frames are received in accordance with transmission states at the respective channels, and wherein the assembling is performed based on a reference clock with respect to virtual containers at the respective channels included in the plurality of frames including the plurality of low capacity virtual containers;

successively detecting factors at the respective channels which are respectively included in the plurality of frames contained in the multiplexed frame, and which are to be objects for delay absorption processings corresponding to the transmission states at the respective channels, as a plurality of pointer values indicating a variation in phase or transmission

delay during transmission at said plurality of channels which
configure the communication network by the SONET/SDH; and

25 indicating the plurality of pointer values successively
detected, at the same time, corresponding to the plurality of
channels.

2. (Original) The transmission state indicating method
according to claim 1, further comprising:

5 storing said plurality of pointer values in association with
information for indicating said plurality of pointer values at
the same time in accordance with said plurality of channels; and

 reading out the plurality of pointer values stored in
association with the information for indicating the plurality of
pointer values corresponding to the plurality of channels, at the
same time.

3. (Original) The transmission state indicating method
according to claim 1, further comprising:

5 carrying out processing for indicating said plurality of
pointer values by relative values with respect to a pointer value
of a reference channel to be a reference among said plurality of
channels when said plurality of pointer values are indicated at
the same time corresponding to the plurality of channels.

4. (Currently Amended) The transmission state indicating method according to claim 1, wherein the plurality of pointer values include ~~, as factors of the respective channels to be objects for the delay absorption processings,~~ values of AU (Administrative Unit) pointers included in H1 bytes and H2 bytes which have been defined to show head portions of the virtual containers in case where the low capacity containers are contained in a payload, at the 4th row of an SOH (Section Overhead) frame in which the plurality of frames are frames of an STM (Synchronous transfer mode) and which is added to the payload of the frame of the STM.

5. (Currently Amended) The transmission state indicating method according to claim 1, wherein the plurality of pointer values include ~~, as factors of the respective channels to be objects for the delay absorption processings,~~ a value of H4 byte which has been defined at the 6th row of a POH (Pass Overhead) added to head portions of the respective virtual containers in case where said plurality of frames are frames of an STM (Synchronous transfer mode) and the virtual containers included in the frames of the STM are a VC-3 format or a VC-4 format.

6. (Currently Amended) The transmission state indicating method according to claim 1, wherein the plurality of pointer

values include ~~, as factors of the respective channels to be the~~
~~objects for the delay absorption processings,~~ values of AU

5 (Administrative Unit) pointers included in H1 bytes and H2 bytes
which have been defined to show head portions of the virtual
containers in case where the low capacity containers are
contained in a payload, at the 4th row of an SOH (Section
Overhead) frame in which said plurality of frames are frames of
10 an STM (Synchronous transfer mode) and which is added to the
payload of the frame of the STM, and a value of H4 byte which has
been defined at the 6th row of a POH (Pass Overhead) added to the
head portions of the respective virtual containers in case where
said plurality of frames are frames of the STM (Synchronous
15 transfer mode) and the virtual containers included in the frames
of the STM are a VC-3 format or a VC-4 format.

7. (Previously Presented) The transmission state indicating
method according to claim 1, further comprising:

converting the multiplexed frame into a concatenation
mapping frame according to rules of concatenation mapping; and
5 detecting a plurality of index values included in the
concatenation mapping frame converted according to the rules of
the concatenation mapping in place of the multiplexed frame.

8. (Previously Presented) A transmission state indicating apparatus for a predetermined transmission system by SONET (Synchronous Optical Network)/SDH (Synchronous Digital Hierarchy), in which high capacity data is divided into a plurality of low capacity virtual containers and transmitted via a plurality of channels which configure a communication network by the SONET/SDH based on clocks at the respective channels, the apparatus comprising:

a frame assembling unit which assembles a plurality of frames back into a multiplexed frame, wherein the plurality of frames are received in accordance with transmission states at the respective channels, and wherein the assembling by the frame assembling unit is performed based on a reference clock with respect to the virtual containers at the respective channels included in the plurality of frames including said plurality of low capacity virtual containers;

a pointer value detecting unit which successively detects factors at the respective channels that are respectively included in the plurality of channels included in the multiplexed frame assembled by the frame assembling unit, and that are to be objects for delay absorption processings corresponding to the transmission states at the respective channels, as a plurality of pointer values indicating a variation in phase or transmission

delay during transmission at the plurality of channels which

25 configure the communication network by the SONET/SDH; and

a display unit which indicates the plurality of pointer values successively detected by the pointer value detecting unit, at the same time, corresponding to the plurality of channels.

9. (Previously Presented) The transmission state indicating apparatus according to claim 8, further comprising:

a storage unit which stores said plurality of pointer values successively detected by the pointer value detecting unit in
5 association with information for indicating the plurality of pointer values at the same time in accordance with the plurality of channels; and

a control unit which reads said plurality of pointer values stored in association with the information for indicating said
10 plurality of pointer values corresponding to the plurality of channels at the storage unit, at the same time.

10. (Previously Presented) The transmission state indicating apparatus according to claim 8, further comprising:

a control unit which carries out processing for indicating the plurality of pointer values successively detected by the
5 pointer value detecting unit, by relative values with respect to a pointer value of a reference channel to be a reference among

the plurality of channels in the case where said plurality of pointer values are indicated at the same time corresponding to the said plurality of channels.

11. (Previously Presented) The transmission state indicating apparatus according to claim 8, wherein the plurality of pointer values include values of AU (Administrative Unit) pointers included in H1 bytes and H2 bytes which have been defined to show head portions of the virtual containers in case where the low capacity containers are contained in a payload, at the 4th row of an SOH (Section Overhead) frame in which the plurality of frames are frames of an STM (Synchronous transfer mode) and are added to payloads of the frames of the STM.

12. (Previously Presented) The transmission state indicating apparatus according to claim 8, wherein the plurality of pointer values include a value of H4 byte which has been defined at the 6th row of a POH (Pass Overhead) added to head portions of the respective virtual containers in case where the plurality of frames are frames of an STM (Synchronous transfer mode) and the virtual containers included in the frames of the STM system are a VC-3 format or a VC-4 format.

13. (Previously Presented) The transmission state indicating apparatus according to claim 8, wherein the plurality of pointer values include values of AU (Administrative Unit) pointers included in H1 bytes and H2 bytes which have been
5 defined to show head portions of the virtual containers in case where the low capacity containers are contained in a payload, at the 4th row of an SOH (Section Overhead) frame in which said plurality of frames are frames of an STM (Synchronous transfer mode) and are added to the payload of the frame of the STM, and a
10 value of H4 byte which has been defined at the 6th row of a POH (Pass Overhead) added to the head portions of the respective virtual containers when the plurality of frames are frames of the STM (Synchronous transfer mode) and the virtual containers included in the frames of the STM are a VC-3 format or a VC-4
15 format.

14. (Previously Presented) The transmission state indicating apparatus according to claim 8, further comprising:
a frame converting unit which converts the multiplexed frame assembled by the frame assembling unit into a concatenation
5 mapping frame according to rules of concatenation mapping; and
an index value detecting unit which detects a plurality of index values included in the concatenation mapping frame

converted according to the rules of the concatenation mapping by the frame converting unit.

15. (Previously Presented) A transmission state indicating apparatus for a predetermined transmission system by SONET (synchronous Optical Network)/SDH (synchronous digital Hierarchy), in which high capacity data is divided into a plurality of low capacity virtual containers and transmitted via a plurality of channels which configure a communication network by the SONET/SDH based on clocks at the respective channels, the apparatus comprising:

a plurality of clock reproducing units which reproduce the clocks of the respective channels from reception signals of a plurality of frames including the plurality of low capacity virtual containers;

a plurality of frame receiving units which receive the plurality of frames including the plurality of low capacity virtual containers in which the high capacity data is divided into the plurality of low capacity virtual containers and transmitted via the plurality of channels which configure the communication network by the SONET/SDH, corresponding to the plurality of the respective channels, and detect the virtual containers at the respective channels based on the clocks of the

respective channels reproduced by the plurality of clock reproducing units;

a reference clock generating unit which generates a reference clock;

25 a frame assembling unit which assembles the plurality of frames back into a multiplexed frame in accordance with transmission states of the respective channels and based on the reference clock from the reference clock generating unit with respect to the virtual containers at the respective channels
30 included in the plurality of the frames received corresponding to the plurality of channels by the plurality of frame receiving units;

a pointer value detecting unit which successively detects factors at the respective channels that are respectively included
35 in the plurality of frames contained in the multiplexed frame assembled by the frame assembling unit, and that are to be objects for delay absorption processings corresponding to the transmission states at the respective channels, as a plurality of pointer values indicating a variation in phase or transmission
40 delay during transmission at the plurality of channels which configure the communication network by the SONET/SDH, and which successively detects the plurality of pointer values based on variations in phases at the respective channels to be detected from phase differences between the clocks at the respective

45 channels reproduced by the plurality of clock reproducing units
and the reference clock generated by the reference clock
generating unit;

an information storage unit which stores the plurality of
pointer values successively detected by the pointer value
50 detecting unit in association with information for indicating the
plurality of pointer values in accordance with the plurality of
channels; and

a display unit which indicates, at the same time, the
plurality of pointer values for respectively evaluating the
55 transmission states of the plurality of channels which configure
the communication network by the SONET/SDH, corresponding to the
plurality of channels, based on the plurality of pointer values
and the information for indicating the plurality of pointer
values corresponding to the plurality of channels which have been
60 stored in association with one another in the information storage
unit.

16. (Original) The transmission state indicating apparatus
according to claim 15, further comprising:

a control unit which carries out processing for indicating
the plurality of pointer values by relative values with respect
5 to a pointer value of a reference channel to be a reference among
the plurality of channels on the display unit.

17. (Currently Amended) The transmission state indicating apparatus according to claim 15, wherein the plurality of pointer values include ~~, as factors of the respective channels to be objects for the delay absorption processings,~~ values of AU
5 (Administrative Unit) pointers included in H1 bytes and H2 bytes which have been defined to show head portions of the virtual containers in case where the low capacity containers are contained in a payload, at the 4th row of an SOH (Section Overhead) frame in which the plurality of frames are frames of an
10 STM (Synchronous transfer mode) and are added to the payload of the frame of the STM.

18. (Currently Amended) The transmission state indicating apparatus according to claim 15, wherein the plurality of pointer values include ~~, as factors of the respective channels to be objects for the delay absorption processings,~~ a value of H4 byte
5 which has been defined at the 6th row of a POH (Pass Overhead) added to head portions of the respective virtual containers in case where the plurality of frames are frames of an STM (Synchronous transfer mode) and the virtual containers included in the frames of the STM are a VC-3 format or a VC-4 format.

19. (Currently Amended) The transmission state indicating apparatus according to claim 15, wherein the plurality of pointer

values include ~~7, as factors of the respective channels to be~~
~~objects for the delay absorption processings,~~ values of AU

5 (Administrative Unit) pointers included in H1 bytes and H2 bytes
which have been defined to show head portions of the virtual
containers in case where the low capacity containers are
contained in a payload, at the 4th row of an SOH (Section
Overhead) frame in which the plurality of frames are frames of an
10 STM (Synchronous transfer mode) and are added to the payload of
the frame of the STM, and a value of H4 byte which has been
defined at the 6th row of a POH (Pass Overhead) added to the head
portions of the respective virtual containers in case where said
plurality of frames are frames of the STM (Synchronous transfer
15 mode) and the virtual containers included in the frames of the
STM are a VC-3 format or a VC-4 format.

20. (Previously Presented) The transmission state
indicating apparatus according to claim 15, further comprising:

a frame converting unit which converts the multiplexed frame
assembled by the frame assembling unit into a concatenation
5 mapping frame according to rules of concatenation mapping; and

an index value detecting unit which detects a plurality of
index values included in the concatenation mapping frame
converted according to the rules of the concatenation mapping by
the frame converting unit.